this country, especially to the teacher of general botany. The key is simple, and despite its broken character, owing to the interpolation of many illustrations, can be used easily by any one really interested in trees; it is based upon the fruits as the sub-title indicates. The list of trees included, does not, of course, agree with similar lists of American trees; this is noticeably true of the oaks (5 species) and the maples (3 species). The greatest value to Americans is in the general chapters on fruits (pp. 3–55) in which the distinctions between seed and fruit, and between the various kinds of fruits, is told in a very readable way. The illustrations will prove very helpful for general demonstration purposes; one very great advantage over most illustrations is the care with which the seed attachment is shown.

JEAN BROADHURST

OF INTEREST TO TEACHERS

BIOLOGY IN SUMMER VACATIONS

In the preliminary report on the high school course in biology prepared by the New Jersey Science Teachers' Association,* suggestions are given for observations during the summer vacation. They are divided into the studies possible at the seaside, on the mountains, in gardens, etc. The questions suggested by Dr. Harper in the July (1908) TORREYA may be too difficult for most of the high school pupils, but some of them, at least, can be used. Will not some teacher, who is in touch with his botany or biology classes again in the fall, send us a report of what he has been able to do in this line? We hear much claimed for biology because it is such a vital subject, in close touch with the child's life. *Can* we in one year give the high school pupil enough to interest him in any such problems and can we enable him to carry them out independently during the summer? Or is it mere talk? Will not some of our teachers try it this summer? Reports upon work of this kind would be more convincing than pages on "educational biology" as to what we can rightfully

*Committee: Mr. G. H. Trafton, Passaic, Chairman; Prof. J. Nelson, Rutgers College, and Miss S. Streeter, Jersey City.

claim for biology or botany and also, as to what we must gracefully yield as wholly beyond high school possibilities.

JEAN BROADHURST

Professor C. S. Gager has an illustrated article on some physiological effects of radium rays in the *American Naturalist* for December, 1908.

The March *Bulletin of the Torrey Botanical Club* has a study of winter buds with reference to their growth and leaf content by Emmeline Moore. This interesting article is illustrated with growth curves and many line drawings of bud sections. The same number contains also an article on some aspects of the mycorhiza problem by Benjamin C. Gruenberg.

The *Journal of Biological Chemistry* for December, 1908, contains an article on *Ibervillea Sonorae*, specimens of which are growing in the New York Botanical Garden. The authors, Miss Julia T. Emerson and Mr. William W. Walker, discuss the plant's chemical composition and its toxicity. One swollen stem that has been lying on a board in a museum case since 1902 still sends up yearly shoots bearing leaves and tendrils.

The parasitic fungi of *Aleyrodes citri*, a serious scale pest of the orange groves in Florida and other southern states, have been recently fully described and illustrated by Mr. Howard S. Fawcett, of the Florida Agricultural Experiment Station; the study was made from an economic standpoint, for the "greatest success in the use of fungi to combat insect pests seems to have been attained in Florida, where proper conditions of temperature and moisture are present."

The *Botanical Gazette* for January, 1909, has an illustrated article by Robert Greenleaf Leavitt on homoeosis, in which is discussed the translocation of characters, such as abscission from the petiole to the petiolules in the horsechestnut, the subdivision of the pinnae as in the frond as a whole in the Pierson and other

ferns, and several other phases of homoeosis, the complete or partial translocation of foliage characters to the flowers or *vice versa*, and the omission of one of the alternative generations as in some ferns, where the tips of the pinnae may be converted into prothallia bearing archegonia and antheridia.

The *New York Tribune* for February 14 reports that "a buried prehistoric forest on the New Jersey coast, near the Sandy Hook military reservation, has been discovered by army engineers while boring for an additional water supply. When the test pipes were down nearly four hundred feet, through strata of red clay, shale, and white sand, a broad strata of wood was found. At one point the borers reported that they went through twenty feet of wood, which they think was a tree trunk still remaining upright. Investigations are being made in the interest of archaeology. If a forest flourished where the sand dunes are now, it is believed it was covered with sand by the action of the sea until buried."

The Calaveras National Forest, the famous grove which contains about 1,400 giant sequoias over six feet in diameter is described in *Science*, March 19. The grove also includes many very large sugar pines, yellow pines, white firs, and cedars. Most of the larger sequoias have been named for famous generals, statesmen, or for states. The Father of the Forests, now fallen, has a basal diameter of over forty feet. Some of these trees contain as much lumber as fifteen acres of ordinary timberland. The first Calaveras bill was introduced some four years ago; the present bill is one of the last signed by President Roosevelt.

Loco-weed, the cause of extensive losses of live stock in the western United States, has been recently investigated by A. C. Crawford (Bull. 129, U. S. Bureau of Plant Industry). Having proved its toxic powers, which was doubted by some investigators, Mr. Crawford next found that the toxicity remained after boiling and was also easily proven in the ash of the plants under examination. In the experiments with animals it was noticed

that a "close analogy exists between the clinical symptoms and pathological findings in barium poisoning and those resulting from feeding extracts of certain loco plants. Small doses of barium salts may be administered to rabbits without apparent effect, but suddenly acute symptoms set in analogous to what is reported on the range," and finally "barium was found in the ash of many 'loco' plants in amounts sufficient to account for the symptoms."

The author mentions that in other localities the toxic action may be due to substances other than barium, and explains the contradictory results previously obtained as follows:

"Loco plants grown on certain soils are inactive pharmacologically and contain no barium. In drying certain loco plants the barium apparently is rendered insoluble so that it is not extracted by water, but can usually be extracted by digestion with the digestive ferments.

"The barium to be harmful must be in such a form as to be dissolved out by digestion.

"In deciding whether plants are poisonous it is desirable not merely to test the aqueous or alcoholic extract, but also the extracts obtained by digesting these plants with the ferments which occur in the gastro-intestinal tract."

NEWS ITEMS

At Munich Dr. P. Renner has been made curator of the cryptogamic herbarium.

The University of Minnesota has been given over 2,000 acres of land for experimental forestry.

L. Lancelot Burlingame has been advanced to assistant professor of botany at Stanford University.

Columbia University is contemplating establishing a course in forestry, with the degree of forest engineer.

The Smithsonian Institution has recently received from Captain John Donnell Smith a second herbarium consisting of over seven thousand fern sheets.

Professor William Stuart, of the Department of Horticulture,